

**ASM International**  
**FY14 Hydrogen Turbines Peer Review Panel**  
**April 14–15, 2014**

**Klaus Brun, Ph.D. – Panel Chair**

Dr. Brun is the Program Director of the Machinery Program at Southwest Research Institute. His experience includes positions in engineering, project management, and management at Solar Turbines, General Electric, and Alstom. He holds 6 patents, authored over 150 papers, and co-authored 2 textbooks on gas turbines and compressors. Dr. Brun won an R&D 100 award in 2007 for his Semi-Active Valve invention and ASME Oil and Gas Committee Best Paper awards in 1998, 2000, 2005, 2009, 2010, and 2012. He was chosen to the "40 under 40" by the San Antonio Business Journal. He is the past chair of the ASME-IGTI Board of Directors and the past Chairman of the ASME Oil and Gas Applications Committee. He is also a member of the API 616 and 690 Task Forces, the Middle East Turbomachinery Symposium, the Fan Conference Advisory Committee, and the Supercritical CO<sub>2</sub> Conference Advisory Committee. Dr. Brun is the Executive Correspondent and columnist of Turbomachinery International Magazine and an Associate Editor of the ASME Journal of Gas Turbines for Power.

Dr. Brun's research interests are in the areas of turbomachinery aero-thermal fluid dynamics, process system analysis, energy management, advanced thermodynamic cycles, instrumentation and measurement, and combustion technology. He is widely experienced in performance prediction; off-design function; degradation; uncertainty diagnostics; and root cause failure analysis of gas turbines, combine cycle plants, integrated gasification combined cycle plants, centrifugal compressors, steam turbines, and pumps.

Dr. Brun received a B.S. in aerospace engineering from the University of Florida and an M.S. and Ph.D. in mechanical and aerospace engineering from the University of Virginia.

**James Heidmann, Ph.D.**

Dr. Heidmann has worked at NASA Glenn Research Center from 1988 to present as an Aerospace Engineer, publishing over 20 research papers and journal articles in the area of turbomachinery aerodynamics and heat transfer. He was elected a Fellow of the American Society of Mechanical Engineers (ASME) in 2007. Since 2012 Dr. Heidmann has served as Manager of NASA's Aeronautical Sciences Project. Prior to this, Dr. Heidmann served as Chief of the Turbomachinery and Heat Transfer Branch at NASA Glenn.

Dr. Heidmann received his B.S. in mechanical engineering from the University of Toledo, his M.S. in mechanical engineering from Purdue University, his Ph.D. in mechanical and aerospace engineering from Case Western Reserve University.

## **Knox Millsaps, Jr., Ph.D.**

Knox T. Millsaps has been the chair of the Department of Mechanical and Aerospace Engineering at the Naval Postgraduate School (NPS) in Monterey, California since 2008, and has been the director of the NPS Marine Propulsion Laboratory, where he conducts research in the area of power and propulsion, since 1996. Other positions he has held at NPS include associate chairman of the Department of Mechanical and Astronautical Engineering from 2002 to 2007, associate provost of academic affairs from 2005 to 2006, and associate provost of institutional development from 2006 to 2007.

Dr. Millsaps' teaching interests span power and propulsion, fluid mechanics, thermodynamics, energy conversion, and heat transfer. His research interests include turbomachinery, power and propulsion, rotordynamics, fluid structure interactions, condition based maintenance of rotating and reciprocating machinery, advanced energy systems, and alternate and synthetic fuels.

Prior to his working at NPS, Dr. Millsaps worked for Pratt & Whitney (both Florida and Connecticut) in the 1980s, working on unsteady, three-dimensional flow. Knox served 2 years as congressional staff in the Office of Representative John M. Spratt (Chairman, House Budget Committee and Senior Member, House Armed Services Committee). From 2000 to 2001, Dr. Millsaps was a Brookings Legislative Fellow in the office of Representative John M. Spratt, Jr., working on procurement and research and development issues, missile defense, DOE weapons laboratories (National Nuclear Security Administration and stockpile stewardship), strategic forces, space assets, electronic warfare, and procurement reform.

Dr. Millsaps is past chair of the board of directors of the ASME International Gas Turbine Institute, editor-in-chief of *Global Gas Turbine News*, a member of ASME and the American Institute of Aeronautics and Astronautics, and associate editor of the ASME *Journal of Gas Turbines and Power*. Additionally, he has served as a member of the ASME Board on Government Affairs and the ASME Energy Committee. In 2005, Dr. Millsaps received an award for Best Paper from the International Gas Turbine Institute, Marine Committee.

Dr. Millsaps received a B.S. in engineering science and physics from the University of Florida in 1983, M.S. in aero/astro from the Massachusetts Institute of Technology (MIT) in 1986, and a Ph.D. in aero/astro and finance from MIT (Sloan and Harvard Business School) in 1991.

## **Douglas M. Todd**

Douglas Todd is the owner and president of Process Power Plants LLC, a consulting company dedicated to integrating gas turbine combined cycles with gasification systems (IGCC) to provide clean, economical electric power and other useful products from low-cost fuels. Mr. Todd's industry experience includes 35 years with General Electric (GE) in engineering, marketing, and product management positions, culminating with business management responsibility for GE's Process Power Plants Organization. Mr. Todd developed and introduced combined cycle and IGCC power plant technology on a worldwide basis.

Recent gas turbine technology development combined with technology partnerships have led to 20 successful IGCC projects, including co-production plants that account for 14 of these projects. Mr. Todd has led the IGCC power block technology into a variety of process power plant applications for co-production of power and hydrogen, clean fuels, gas-to-liquids, and carbon dioxide reduction technologies. By applying integration techniques and unique modifications in the power block, various process technologies can be enhanced, improving economics and extending commercial applications

for these processes.

Mr. Todd is a member of the American Institute of Chemical Engineers, the Gasification Technologies Council (GTC), and Energy Frontiers International. He received the first European Institution for Chemical Engineers Medal for Excellence in Gasification in 2002 and the GTC Lifetime Achievement Award in 2003. Mr. Todd has published numerous technical papers for various entities including ASME and the Electric Power Research Institute. Mr. Todd received a B.S. degree in chemical engineering from Worcester Polytechnic Institute.

### **Richard Wenglarz, Ph.D.**

Richard Wenglarz is a consultant for advanced energy systems, particularly related to gas turbines. His energy system experience includes about 23 years at major energy companies and, most recently, 10 years at the South Carolina Institute for Energy Studies (SCIES) at Clemson University.

At SCIES, Dr. Wenglarz was Manager of Research for the University Turbine Systems Research program organized as a consortium of government, industry, and about 110 member universities. Working with an industrial review board of up to 17 member companies (e.g., General Electric, ExxonMobil, British Petroleum, Siemens, etc.), he was responsible for defining request for proposal research objectives, evaluating and selecting university proposals to accomplish the objectives, and overseeing the university research projects awarded throughout the nation. He also oversaw workshops to disseminate the results of the university research to Government, industry, and academia.

Prior to SCIES, Dr. Wenglarz held research and project management positions over about 23 years related to advanced turbine systems at Rolls Royce/Allison Gas Turbine Company and Westinghouse Research and Development Center. He managed a program that successfully demonstrated an Allison 501 gas turbine with first-stage ceramic vanes at an Exxon natural gas processing plant. He also conducted numerous plant economic analyses for the DOE/Allison Advanced Turbine System and the DOE/Allison Direct Coal Fired Turbine System Program. In addition, Dr. Wenglarz was responsible for developing and evaluating turbine flow path protection approaches from deposition, erosion, and corrosion for the Allison Direct Coal Fired Turbine Program and at Westinghouse. He also managed the Allison internal research and development program for coal fuels and the DOE/Allison Component Screening Program, both directed to developing a technology base for direct coal fueled turbines.

Dr. Wenglarz has authored over 80 publications and has delivered invited presentations at the Von Karman Institute for Fluid Dynamics (Belgium), Yale University, UK Central Electricity Research Laboratories, Cambridge University, the Kentucky Energy Cabinet Laboratories, 8th Liege Conference on Materials for Advanced Power Engineering (Belgium), and the Sultzer Metco Gen 5 Ceramics Consortium. He also developed and presented a course segment on turbine corrosion and deposition at the DOE sponsored short course "Impact of Synfuels and Hydrogen Fuels Relevant to Gas Turbine Development."

Dr. Wenglarz received B.S. and M.S. degrees from the University of Illinois, and a Ph.D. from Stanford University, all in engineering mechanics.